

Appl. No. 09/678,923
Amdt. dated September 30, 2003
Reply to Office Action of April 2, 2003
Attorney Docket K-1633

REMARKS/ARGUMENTS

Claims 1-14 remain in this application.

This Amendment is submitted in response to the Official Letter dated April 2, 2003. Favorable reconsideration of the application is respectfully requested.

1. Objection to the Drawings Under 37 CFR 1.83(a)

The drawings stand objected to as failing to show every feature of the invention specified in the claims. The Examiner stated, "in claim 1, line 1 and 6, the "all effective cutting" must be shown or the feature(s) canceled from the claim(s). Correction is required.

Initially, it is respectfully submitted that the drawing does show that each flute acts as an entire cutting edge and is shown in the drawings. Taking a line parallel to the arrow shown in FIG. 4 it is believed that the inserts do present a continuous cutting edge as suggested.

Nonetheless, if the Examiner can be more specific as to which flute and which inserts the Examiner believes do not show all effective cutting then applicant will be in a better position to address the Examiner's objection.

2. Section 112, Second Paragraph, Rejection of Claim 9

Claims 1-14 stand rejected as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. As set forth above, the "all effective cutting" description in the specification and drawings is unclear. The "all effective cutting" is not well defined.

It is respectfully submitted that it has been consistently held that the 1st paragraph of Section 112 requires nothing more than objective enablement. In satisfying the enablement requirement, an application need not teach, and preferably omits, that which is well known. An application does not have to be a blueprint in order to satisfy the requirement for enablement under 35 USC §112, first paragraph. How such a teaching is set forth, whether by the use of illustrative examples or by broad descriptive terminology, is of no importance since an application which teaches how to make and use the invention in terms which correspond in scope to the claims must be taken as complying with the first paragraph of 35 USC §112.

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The term "all effective cutting" is a term that is well known in the art¹. In simplistic terms, "all effective cutting" means that each flute acts as an entire cutting edge. In contrast, "half effective cutting" means that it takes two flutes to act as an entire cutting edge.

The claimed invention relates to an all effective cutting tool including at least a first and a second spiraling flute. Each flute includes a plurality of inserts secured therein to define an axial rake. The axial rake angle is the axial tilt of the seat 34 and/or the insert seated thereon in an end-to-end manner. More particularly, the axial rake angle is the angle between the center axis of the tool body 10 and any plane parallel to the cutting edge of the insert seated in the seat face 36.

The claim further defines that the axial rake angle of the inserts varies between flutes and within each flute to provide all effective cutting. As described in the specification and shown in FIG. 4, the axial rake angles α_{nm} , β_{nm} and γ_{nm} vary for each insert row n within each flute column m, e.g. 22, 24 and 26. By varying the rake angles α_{nm} , β_{nm} and γ_{nm} of insert to give an approximate lead angle in each individual pocket and/or each flute, the effect is a more homogeneous display of cutting edges as the inserts are presented to the workpiece.

Furthermore, the effective axial length Z1, Z2, Z3 of the inserts will vary between grooves inversely to the axial rake angle. As shown in FIG. 4, the effective axial length Z3 of the respective insert is longer than the effective axial length Z2 of the respective insert which is longer than the effective axial length Z1 of the respective insert, although the insert dimensions including overall length L are identical. The calculation of this effective axial length is a geometric calculation where the effective axial length of the insert is one side of a triangle, the actual insert length is the longest side of the triangle, and the axial rake angle is the inclusive angle therebetween.

When the effective axial lengths Z, which are approximate the actual cutting length of each respective insert, are projected into a two dimensional view, they appear as shown in FIG. 4. The differing axial rakes equate to differing circumferential cutting lengths. By providing flutes with inserts thereon of differing axial lengths, the inserts are staggered and provide "all effective" cutting.

It is believed that when considering the present specification and the knowledge of one skilled in the art, the claims do read on the subject matter that is described in the specification as to enable one skilled in the art to make and use the claimed invention.

¹ See, for example, U.S. Patent No. 5,913,644.

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The Examiner has stated that the Declaration defining the term "all effective cutting" is questionable. Where the evidence submitted to overcome the rejection is insufficient, the Examiner must explain why the evidence is insufficient. See MPEP 716.01(B). A conclusory statement unsupported by substantiating evidence, is respectfully, insufficient.

For at least these reasons, withdrawal of the rejection is respectfully requested.

3. Section 112, 2nd Paragraph, Rejection of Claims 1-14

Claims 1-14 stand rejected as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicants regard as the invention. In claim 1, lines 1 and 6, and claim 8, line 7, it is not clear what is meant by "all effective cutting" since it was not well defined.

Initially, it is respectfully submitted that the term "all effective cutting" is a term well known in the art. A description of the term is provided above. Applicants have merely used the term in accordance with its accepted meaning. Consequently, it is respectfully submitted that Claims 1-14 are definite and do particularly and distinctly claim the subject matter which applicants regard as the invention.

Merely stating that the Declaration defining the term "all effective cutting" is questionable in insufficient. See MPEP 716.01(B).

Withdrawal of the rejection is respectfully requested.

4. Section 102(b) Rejection of Claims 1, 2, 6 and 7

Claims 1, 2, 6 and 7 stand rejected under 35 U.S.C. 102(b) as being anticipated by Tsujimura et al. (4,844,666). The Office Action provides:

"Tsujimura et al. discloses the claimed invention comprising, as shown in Fig. 15, a tool body having an outer surface thereon and a central axis therein and including at least a first (including 24a) and second (including 24b) spiraling flute in the outer surface, each flute including a plurality of inserts (24a, 24b) secured therein to define an axial rake angle, wherein the axial rake angle of the inserts (24a, 24b) varies between flutes (e.g., changing from a1 to a4), and within each flute (changing from a1, a2, to a3 for the flute having inserts 24a) to provide all effective cutting.

Note Tsujimura et al. also discloses the limitations described in claims 2-14, such as all of the inserts (24a, 24b) on the entire tool body being identical; the inserts each having a cutting edge and the cutting edges on inserts with differing axial rake angles have differing cutting edge lengths."

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In order for a reference to be an anticipatory reference, the reference must disclose each and every element of the claimed invention. It is respectfully submitted that Tsujimura does not teach or suggest all the elements recited in the claims.

The Tsujimura patent discloses a half effective cutting tool. See Declaration of Kenneth G. DeRoche. Opinions of experts in affidavits *must* be given consideration. The claimed invention relates to an all effective cutting tool.

For at least these reasons, Claim 1 is allowable over the applied art. Claims 2 and 7 depend from Claim 1 and are likewise allowable over the applied art for at least the same reasons described above for Claim 1. Withdrawal of the rejection is respectfully requested.

5. Section 103(a) Rejection of Claims 3-5 and 8-14

Claims 3-5 and 8-14 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Tsujimura et al. in view of Dutschke et al. (5,425,603). The Office Action provides:

"Tsujimura et al. discloses the claimed invention except for: the tool body including three spiraling flutes; the actual lengths of adjacent inserts in any flute circumferentially overlap (in claim 8).

Dutschke et al. discloses a cutting insert comprising the tool body including three spiraling flutes (18); the actual lengths of adjacent inserts in any flute circumferentially overlap as shown in Figs. 3a, 3b.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Tsujimura et al.'s insert to comprise the tool body including three spiraling flutes; and the actual lengths of adjacent inserts in any flute circumferentially overlap, as taught by Dutschke et al., in order to simplify the structure, and to facilitate the cutting process, such as better guiding the chip flow in different machining conditions for the Tsujimura et al.'s tool.

As to claims 4 and 10, all of the inserts (24a, 24b) on the entire tool body being identical.

As to claim 9, the inserts (24a, 24a) in the first flute being secured at a first axial rake angle while the insert (24b, 24b) in the second flute being secured at a second axial rake angle different from the first axial rake angle as shown in Fig. 15; and

As to claim 13, the actual lengths of adjacent inserts (such as 24a, 14a, Fig. 15) in any flute do not circumferentially overlap."

To establish a *prima facie* case of obviousness, three criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success.

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Finally, the applied reference must teach or suggest all the claim limitations (See MPEP §2143).

It is respectfully submitted that the Office Action does not meet the criteria for establishing a *prima facie* case of obviousness.

Initially, Claims 3-5 depend from Claim 1 and are believed to be in condition for allowance for at least the same reasons as Claim 1 described above.

In regard to Claims 8-14, Claim 8 recites that the cutting edges on adjacent inserts in any flute do not circumferentially overlap. Both Tsujimura and Dutschke teach that cutting edges on adjacent inserts in a flute circumferentially overlap. Accordingly, neither of the applied references teaches or suggests all the features recited in the claims such that a *prima facie* case of obviousness is found.

For at least these reasons, Claims 1 and 8 are allowable over the applied art. Claims 3-5 and 9-14 depend from Claims 1 and 8 and are likewise allowable over the applied art for at least the same reasons described above for Claims 1 and 8. Withdrawal of the rejection is respectfully requested.

6. Extension of Time

Applicant(s) petition for an extension of time of three months and request that this be considered a petition therefor and that such fee be charged to Deposit Account No. 11-0508.

7. Request For Telephone Interview

As a final matter, if the Examiner has any suggestions concerning different claim phraseology that, in the opinion of the Examiner, more accurately defines the present invention, prior to issuance of another Office Action, Applicants' undersigned attorney requests the courtesy of a telephone interview at the Examiner's earliest convenience to discuss the application. Applicants' undersigned attorney may be contacted at (724) 539-5485.

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8. Conclusion

In view of the amendments and above remarks, it is believed that the application is in condition for allowance. Accordingly, an early Notice Of Allowance is respectfully requested.

Respectfully submitted,



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